REMARKS

Favorable reconsideration of this application in light of the preceding amendments and the following discussion is respectfully requested.

No claims having been added or canceled by this response, Applicants respectfully submit that claims 1-7, 9-18, 20-26, 29, 31-48, 51 and 53-56 remain pending and properly under consideration in this application. Applicants submit that the above Listing of Claims shows the amended claims in marked-up form in accordance with 37 C.F.R. § 1.121. Applicants submit that the amendment to claim 35 is intended to correct a typographical error that resulted in the deletion of the subject from the dependent clause.

Rejections under 35 U.S.C. § 103

Claims 1-7, 9-18, 20-26, 29, 31-48, 51 and 53-56 stand rejected under 35 U.S.C. 103(a) as unpatentable over So's U.S. Pub. Pat. Appl. No. 2002/0109879 A1 ("So") in view of Enoki et al.'s U.S. Pub. Pat. Appl. No. 2002/0057691 A1 ("Enoki"). Applicants traverse this rejection.

Applicants note that the Examiner again cites So's paragraphs [0194], [0365], [0488] and [0572] for allegedly teaching each of the claimed elements with the exception of having the device itself generate a backward path request message. Applicants

respectfully incorporate the discussion provided in their response of December 1, 2007, with regard to the deficiencies noted in So's disclosure.

Turning to the secondary reference, Applicants submit that Enoki does not remedy the deficiencies previously identified in So. Initially, Applicants note that the cited portion of Enoki provides only that "the LSR 3 ***transmits*** a label request message S26 required for the down direction LSP setup ...." Action at 3 (citing Enoki para. [0147] (emphasis added). Applicants submit that those of ordinary skill in the art recognize a distinction between the act of ***generating*** and the act of ***transmitting***. Indeed, Applicants contend that the cited portion of Enoki simply duplicates the disclosure provided in So that provided:

> [0194] The construction of a bi-directional lightpath differs from the construction of a uni-directional lightpath above only in that upon receiving the setup request, the last-hop router ***returns the setup message using the reverse of the explicit route of the forward path. Both directions of a bi-directional lightpath share the same characteristics***, *e.g.*, set of nodes, bandwidth and restoration requirements. For more general bi-directional connectivity, a user simply requests multiple individual lightpaths.

So, para. [0194] (emphasis added). Applicants contend that Enoki, like So, provides for a terminal device capable of transmitting a backward path based on the "bidirectional setup" information received from LSR 1, but that there has been no showing that Enoki teaches or suggests that the "LSR 3" router is capable of independently ("by itself") generating a backward path. Enoki provides:

> [0143] It is to be noted that FIG. 15 shows a sequence of the bidirectional LSP setup message in the embodiment (2). In case an external request S20 of setting up 1 Mbps LSP between the terminals "A" and "B" is made to the LSR 1, the ***LSR 1 transmits a label request message S21 in which the bidirectional setup and the down direction (from terminal "B" to "A") bandwidth designation of 1 Mbps are set*** in the vendor-private TLV to the LSR 2.
>
> [0144] The LSR 2 which has received the message S21 transmits the label request message S22 similar to the message S21 to the LSR 3.
>
> [0145] The LSR 3 performs the process for the bidirectional LSP setup ***based on the vendor-private TLV within the label request message S22.*** At this time, the LSR 3 stores the correspondence of the bidirectional LSP ID's and performs a down direction LSP setup S23 ***with the designated bandwidth (1 Mbps).***

Enoki, paras. [0143]-[0145] (emphasis added).

Applicants contend, therefore, that one of ordinary skill in the art would understand that Enoki, like So, teaches that the down direction information is provided to the device from external (downstream) sources. Accordingly, in both So and Enoki, the characteristics of the "backward" or "down direction" path are defined by the "setup request" received from LSR 1 without any modification or independent action by the receiving unit in defining the "down direction" parameters. Applicants further note that this understanding of Enoki is reinforced by Enoki's characterization of the invention as comprising:

> . . . a bidirectional LSP setup accepting portion for ***accepting an external bidirectional LSP setup request***, a bidirectional LSP setup TLV preparing portion for ***preparing a bidirectional LSP setup TLV included in a bidirectional setup label request message transmitted in an up direction***

> to a label switching router placed at another end of the LSP based on the bidirectional LSP setup request, a bidirectional LSP setup TLV analyzer for analyzing the bidirectional LSP setup TLV in the message when the message is received from the label switching router at the other end, a bidirectional LSP processor for performing an LSP setup request in a down direction as opposed to the up direction ***based on the analyzed result by the bidirectional LSP setup TLV analyzer***, and an explicit route preparing portion for preparing an explicit route on which a router to be relayed in the down direction is prescribed, ***based on an explicit route preparing request from the bidirectional LSP processor***, based on the CRLDP, and for notifying the prepared route to the bidirectional LSP processor.

Enoki, para. [0034] (emphasis added).

Applicants note that, as amended, claim 1 requires that the network device be operable in a manner that whereby the device can:

> . . . independently generate and send a backward path request message to a source of a separately generated, initial ***forward path request message*** associated with a forward Label Switched Path (LSP) between the device and the source . . . . (emphasis added)

Applicants further contend that the cited portions of Enoki cannot fairly be characterized as providing for the "independent" generation of the "backward path" as recited in the pending claims. Indeed, with respect to backward path generation, Enoki's "LSR 3" router may be more fairly characterized as a "slave" unit that merely utilizes the routing information from the received ***bidirectional*** setup.

Applicants contend, therefore, that the proposed combination of So and Enoki references are not sufficient to teach or suggest each element of the pending claims as

required for a rejection under 35 U.S.C. § 103. Furthermore, Applicants contend that one of ordinary skill in the art relying on the So and Enoki references would not be led to the functional modifications necessary to achieve the claimed inventions.

With respect to claim 2, the Examiner suggest that So's paragraphs [0374], specifically lines 4-6, and [0482], specifically lines 1-3, teach the additional elements recited in claim 2. Applicants note that these paragraphs provide in their entirety:

> [0374] At a conceptual level, explicit LSPs and optical channel trails exhibit certain commonalities. Essentially, they are both fundamentally unidirectional, point-to-point virtual path connection abstractions. ***An explicit LSP provides a parameterized packet forwarding path (traffic-trunk) between an ingress LSR and an egress LSR.*** Correspondingly, an optical channel trail provides a (possibly parameterized) optical channel between two endpoints for the transport of client digital signals. The payload carried by both LSPs and optical trails are transparent to intermediate nodes along their respective paths. Both LSPs and optical trails can be parameterized to stipulate their performance, behavioral, and survivability requirements from the network.

and

> [0482] ***Using the concept of nested LSPs (with a label stack) allows the system to scale by building a forwarding hierarchy.*** At the top of this hierarchy are FSC interfaces, followed by LSC interfaces, followed by TDM interfaces, followed by PSC interfaces. This way, an LSP that starts and ends on a PSC interface can be nested (together with other LSPs) into an LSP that starts and ends on a TDM interface. This LSP, in turn, can be nested (together with other LSPs) into an LSP that starts and ends on a LSC interface, which in turn can be nested (together with other LSPs) into an LSP that starts and ends on a FSC interface.

Action at 3 (emphasis added). Applicants submit that the cited portions of the So reference cannot fairly be characterized as teaching a device capable of generating and

sending an "initial, forward path reservation message to the source in order to establish the forward LSP after receiving the initial forward path request message." Applicants suggest that the cited portions of the So reference do not provide any basis for determining where, within the system, the "initial forward path reservation message" is generated. Indeed, as detailed above, Applicants contend that, as taught by So, it is the initial request from the "source" that provides the information for the forward path rather than path information generated in the receiving or "last-hop router."

With regard to claims 3 and 4, Applicants incorporate the discussion above regarding the teachings of the So and Enoki references. Applicants contend that the discussion provided, Action at 3-4, muddles the source/device/destination distinction among the system components. Applicants request, therefore, that the next communication from the Office provide a substantive explanation as to how the cited portions of the reference are being interpreted to support the present rejection. In particular, Applicants again contend that while the cited paragraphs of the So reference provide:

> [0194] The construction of a bi-directional lightpath differs from the construction of a uni-directional lightpath above only in that upon receiving the setup request, ***the last-hop router returns the setup message using the reverse of the explicit route of the forward path. Both directions of a bi-directional lightpath share the same characteristics, e.g., set of nodes, bandwidth and restoration requirements***. For more general bi-directional connectivity, a user simply requests multiple individual lightpaths.

* * *

> [0365] The functions of the control plane (for both LSRs and OXCs) include resource discovery, distributed routing control, and connection management. In particular, the control plane of the LSR is used to discover, distribute, and maintain relevant state information associated with the MPLS network, and to instantiate and maintain label switched paths (LSPs) under various MPLS traffic engineering rules and policies. An LSP is the path through one or more LSRs followed by a specific forwarding equivalence class (FEC). An explicit LSP is one whose route is defined at its origination node.

* * *

> [0488] ***While traditional traffic engineered MPLS (and even LDP) are unidirectional, generalized MPLS supports the establishment of bi-directional LSPs, see Section 4. The need for bi-directional LSPs come from non-PSC applications.*** There are multiple reasons why such LSPs are needed, particularly possible resource contention when allocating reciprocal LSPs via separate signaling sessions, and simplifying failure restoration procedures in the non-PSC case. Bi-directional LSPs also have the benefit of lower setup latency and lower number of messages required during setup. Other features supported by generalized MPLS are rapid failure notification, see Section 5, and termination of an LSP on a specific egress node, see Section 6.

So, paras. [0194], [0365] and [0488] (emphasis added). Applicants contend that there is no indication or suggestion in the cited portions as to which components of the system are generating and receiving the various routing-related messages or the content of those messages. Applicants contend that absent such specificity, speculation as to the content of those messages is not sufficient to support the present rejection.

With regard to claims 5 and 6, Applicants contend that focusing on the correspondence of the forward and backward paths fails to address the manner in which those paths are generated. Applicants contend, therefore, that the discussion above with

regard to the manner in which the So reference generates the respective paths is equally applicable to claims 5 and 6.

With regard to claim 7, Applicants incorporate the discussion above with regard to the generation and content of the various messages transmitted among the system components for the purposes of establishing forward and backward LSPs. Again, Applicants contend that, as taught by So, the backward path routing is provided in the forward path request and is not, therefore, independently generated by the device.

With regard to claims 9-18 and 20-22, Applicants contend that these claims' dependence from claim 1 is sufficient to distinguish them from the teachings of So.

With regard to claim 12, Applicants further contend that the cited paragraph:

> [0320] Random fluctuations in the location of rising and falling edges of bits relative to a local or recovered clock reference. As line speeds continue to increase, jitter will become a critical performance parameter.

So, para. [0320], does not teach or suggest a QoS indicator. Action at 5. Accordingly, Applicants contend that the present rejection is not properly supported by the cited portions of the applied reference and that the rejection should be withdrawn.

With regard to claim 13, Applicants further contend that the cited paragraphs:

> [0230] End-to-end restoration is proposed for all-optical networks or sub-networks. If no wavelength conversion is used in the network and on the client/network interface, then the same wavelength will be required for the primary and restoration lightpaths if the client cannot retune its

> wavelength on failure. Whether or not the client can provide this re-tuning can be passed as a parameter in the lightpath request.
>
> [0231] Wavelength selection on the primary and restoration lightpaths should be simultaneously performed if the same wavelength is required on both of these lightpaths. This requires that the wavelengths available on both of the lightpaths to be returned to the first-hop router and a decision made before either lightpath is established. It also requires that specific wavelengths be reserved for restoration at each node, significantly increasing the state information required. The issue becomes even more complex in a hybrid transparent and opaque OXC environment. However, we believe that we should focus on opaque OXC environment on the first phase while keeping in mind that in the future it may be required to incorporate transparent and mixed optical networks.

So, paras. [0230] and [0231], Action at 5, do not suggest that any such request originates the claimed network device. Accordingly, Applicants contend that the present rejection is not properly supported by the cited portions of the applied reference and that the rejection should be withdrawn.

With respect to claim 14, Applicants further contend that the cited paragraph:

> [0615] (b) Lightpath deletion: This action allows an existing lightpath (referenced by its ID) to be deleted. (c) Lightpath modification: This action allows certain parameters of the lightpath (referenced by its ID) to be modified. Lightpath modification may be subject to network-defined policies. Lightpath modification must be non-destructive, e.g., the success or failure of the modification procedure must not result in the loss of the original lightpath.

So, para. [0615], Action at 5-6, does not teach or suggest that the network device, rather than the source, initiates the lightpath deletion. Accordingly, Applicants contend that the

present rejection is not properly supported by the cited portions of the applied reference and that the rejection should be withdrawn.

With respect to claims 15 and 16, Applicants further contend that the cited paragraphs:

> [0570] For bi-directional LSPs, two labels must be allocated. Bi-directional LSP setup is indicated by the presence of an Upstream Label in the REQUEST/Path message. An Upstream Label has the same format as the Generalized Label, see Section 3.2. In RSVP the Upstream Label uses a new class number (TBD of form 0bbbbbbb) and the C-type of the label being suggested. In CR-LDP, Upstream Label uses type=0x0906.
>
> * * *
>
> [0572] The process of establishing a bi-directional LSP follows the establishment of a unidirectional LSP with some additions. To support bi-directional LSPs an Upstream Label is added to the Path/REQUEST message. The Upstream Label MUST indicate a label that is valid for forwarding at the time the Path/REQUEST message is sent. When a Path/REQUEST message containing an Upstream Label is received, the receiver first verifies that the upstream label is acceptable. If the label is not acceptable, the receiver MUST issue a PathErr/NOTIFICATION message with a "Routing problem/Unacceptable label value" indication. An intermediate node must also allocate a label on the outgoing interface and establish internal data paths before filling in an outgoing Upstream Label and propagating the Path/REQUEST message. If an intermediate node is unable to allocate a label or internal resources, then it MUST issue a PathErr/NOTIFICATION message with a "Routing problem/Label allocation failure" indication. Terminator nodes process Path/REQUEST messages as usual, with the exception that the upstream label can immediately be used to transport associated data upstream to the initiator. When a bi-directional LSP is removed, both upstream and downstream labels are invalidated and it is no longer valid to send data using the associated labels.

So, paras. [0570] and [0572] do not teach or suggest that the claimed network device is "operable to send the first delete path message ...." Action at 6. Accordingly, Applicants contend that the present rejection is not properly supported by the cited portions of the applied reference and that the rejection should be withdrawn.

With respect to claims 17, 18 and 20-22, Applicants incorporate the discussion above with regard to the "generation" function attributed to the cited portions of the Enoki reference. In particular, Applicants maintain that the "bidirectional LSP setup message" provides the information for the LSP to the node and that there is no teaching or suggestion of independent "generation" of path data at the network device in response to a backward path request or other message from the destination.

With regard to claims 23-26, 29, 31-48, 51 and 53-56, Applicants incorporate the discussion above with respect to the applicability of So and Enoki to the preceding claims and contend that the method and means claims are allowable for at least the same reasons. In particular, Applicants contend that the cited portions of the So and Enoki references do not clearly support the associated contention(s) with regard to the teachings as understood by one of ordinary skill in the art. Applicants maintain, therefore, that until some substantive explanation is provided as to exactly how the cited text supports the pending rejection, Applicants have not been afforded a full and fair opportunity to understand and address the Examiner's technical interpretation and reasoning.

Applicants request that the pending rejections be reconsidered and withdrawn accordingly.

CONCLUSION

In view of the above remarks and amendments, Applicants respectfully submit that each of the pending objections and rejections have been addressed and overcome, leaving the present application in condition for allowance. A Notice to that effect is respectfully requested.

If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to contact the undersigned.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge any underpayment or non-payment of any fees required under 37 C.F.R. §§ 1.16 or 1.17, or credit any overpayment of such fees, to Deposit Account No. 503777, including, in particular, extension of time fees.

Respectfully submitted,

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